

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

- 5 Claim 1 (currently amended): A method for improving processing efficiency of pipeline architecture with a processor, the processor having:
- a first functional unit for executing a calculation task;
- a second functional unit for executing another calculation task; and
- a control unit electrically connected to the first and the second functional units for
- 10 generating a plurality of control signals to control the first and the second functional units;
- the method comprising:
- (a) executing a first calculation task with the first functional unit or the second functional unit;
- 15 (b) determining an executing time period of a second calculation task with the control unit according to the functional unit executing the first calculation task, an executing time period of the first calculation task, and whether the second calculation task depends upon a result of the first calculation task; and
- (c) executing the second calculation task with the first functional unit according to
- 20 the executing time period of the second calculation task determined in step (b)[[.]]; wherein when a calculation task executed by the second functional unit requires
- more instruction cycles than that of the first functional unit, the control signals
- control the first and the second functional units to execute the first calculation
- 25 task within a first time period and a second time period, and to execute the
- second calculation task within the second time period and a third time period
- sequentially, the method further comprises:

5                   when the first calculation task is executed by the second functional unit within  
                      the first and the second time period and the second calculation task is  
                      executed by the first functional unit, if the second calculation task does  
                      not depend upon the result of the first calculation task, executing the  
                      second calculation task with the first functional unit within the second  
                      time period, if the second calculation task depends upon the result of the  
                      first calculation task, executing the second calculation task with the first  
                      functional unit within the third time period;  
10                   when the first calculation task is executed by the first functional unit within the  
                      first time period and the second calculation task is also executed by the  
                      first functional unit, if the second calculation task does not depend upon  
                      the result of the first calculation task, executing the second calculation  
                      task with the first functional unit within the second time period, if the  
15                   second calculation task depends upon the result of the first calculation  
                      task, executing the second calculation task with the first functional unit  
                      within the third time period; and  
                      when the first calculation task is executed by the first functional unit within the  
                      second time period and the second calculation task is also executed by the  
                      first functional unit, executing the second calculation task with the first  
20                   functional unit within the third time period.

Claim 2 (cancelled)

25                   Claim 3 (currently amended): The method of claim [[2]] 1 wherein lengths of the first, the  
                      second, and the third time periods are all equal to one instruction cycle.

                      Claim 4 (currently amended): The method of claim [[2]] 1 wherein the first, the second,  
                      and the third time periods are non-overlapping with one another.

Claim 5 (currently amended): The method of claim [[2]] 1 wherein the second time period is later than the first time period and the third time period is later than the second time period.

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Claim 6 (original): A method for improving processing efficiency of pipeline architecture with a processor, the processor having:

a first functional unit for executing a calculation task requiring a calculating time of one instruction cycle;

10 a second functional unit for executing a calculation task requiring a calculating time of two instruction cycle; and

a control unit electrically connected to the first and the second functional units for generating a plurality of control signals to control the first and the second functional units, so as to execute a first calculation task within a first time period and a second time period, and to execute a second calculation task within the second time period and a third time period sequentially, lengths of the first, the second, and the third time periods being all equal to one instruction cycle, the first, the second, and the third time periods being non-overlapping with one another, the second time period being later than the first time period and the third time period being later than the second time period;

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the method comprising:

when the first calculation task is executed by the second functional unit within the first and the second time period and the second calculation task is executed by the first functional unit, if the second calculation task does not depend upon the result of the first calculation task, executing the second calculation task with the first functional unit within the second time period, if the second calculation task depends upon the result of the first calculation task, executing

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the second calculation task with the first functional unit within the third time period;

- 5           when the first calculation task is executed by the first functional unit within the first time period and the second calculation task is also executed by the first functional unit, if the second calculation task does not depend upon the result of the first calculation task, executing the second calculation task with the first functional unit within the second time period, if the second calculation task depends upon the result of the first calculation task, executing the second calculation task with the first functional unit within the third time period; and
- 10           when the first calculation task is executed by the first functional unit within the second time period and the second calculation task is also executed by the first functional unit, executing the second calculation task with the first functional unit within the third time period.